



CII Institute of Logistics
PGDSCM & Certificate Programs
Semester-end Examination – June 2010

QUANTITATIVE TECHNIQUES

Time : Three Hours

Marks : 100

Part A

Answer all questions

(10 x 1 = 10 Marks)

1. The curve for cumulative frequency distribution
 - a) Histogram
 - b) Ogive
 - c) Line diagram
 - d) Frequency Polygon
2. The median of the numbers 32, 14, 27, 25, 34, 19, 29, 15, 31 is
 - a) 25
 - b) 29
 - c) 27
 - d) 31
3. Standard deviation of a set of numbers is 15. If each value is multiplied by 3 and 5 is added, the standard deviation of the new series is
 - a) 50
 - b) 45
 - c) 15
 - d) 20
4. Two or more events which cannot occur simultaneously are
 - a) Independent
 - b) Mutually exclusive
 - c) Equally likely
 - d) exhaustive
5. The correlation coefficient has value
 - a) Between 0 and 1
 - b) Between -1 and 0
 - c) Between -1 and 1
 - d) None of these
6. Number of observations is 10. Sum of squares of differences in ranks is 27. Rank correlation coefficient is
 - a) 0.267
 - b) 0.867
 - c) 0.92
 - d) 0.567
7. The matrix obtained by interchanging rows and columns is called
 - a) inverse
 - b) Adjoint
 - c) Transpose
 - d) None of these
8. When every unit of the population has the same chance of being included in the sample, it is
 - a) Judgment sampling
 - b) Probability sampling
 - c) Cluster sampling
 - d) Quota sampling
9. Laspeyre's index number is 121. Paasche's index number is 169. Fisher's index number is
 - a) 143
 - b) 145
 - c) 150
 - d) None of these
10. Addition theorem of probability is

- a) $P(A \cup B) = P(A) + P(B)$
- b) $P(A \cup B) = P(A) + P(B) + P(A \cap B)$
- c) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$
- d) None of these

Part B

Answer any four

(4x15 = 60 marks)

1. Briefly explain the different index numbers
2. Briefly explain the functions of DBMS
3. Find the two regression lines from the following data

X	20	60	55	45	75	35	25	90	10	50
Y	20	45	65	40	55	35	15	80	25	50

4. A random sample of size 196 gave a mean of 43.5 and standard deviation 12.8. Test whether the population mean could be 46.2.
5. The number of accidents attributed to a taxi driver in a city is 3. Using Poison distribution, out of 1000 drivers, find the number of drivers with
No accidents
Atleast 3 accidents ($e^{-3} = 0.0498$)
6. Find the Quartile Derivation for the data given below
239, 201, 163, 241, 266, 237, 225, 239, 284

Part C

Answer all the Questions

(3x10=30 marks)

1. A Car Hire firm has two cars which it hires out day to day. Average demand is 1.5 cars following Poison distribution. Find the proportion of days when no cars is used and also days in which demand is refused ($e^{-1.5} = 0.2227$)

2. A yacht company has developed a cabin cruiser ear marked for the large boat market. A market analysis has 30% probability of annual sales of 5000 boats, 40% probability of 4000 sales and 30% probability of 3000 sales. The company can go into limited production where variable costs are Rs.10000 per boat and fixed costs are Rs. 8, 00, 000 annually. Or it can go into full scale production where variable costs are Rs.9000 per boat and fixed costs are Rs.50,00,000 annually. If the new boat sells for Rs.11,000, should the company go into limited production or full scale production?
3. Ten soldiers selected at random have heights 170,172, 169, 173, 175, 177, 175, 172, 175, 174 cms. Test whether the mean height is 175 cms given $t = 2.262$ for 9 degrees of freedom at 5.1 level.
